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IF we may trust the newspaper accounts of the tenor of the report (not yet published) of the Supervising Architect of the Treasury Department, Mr. Hill takes the ground of his predecessor, Mr. Potter, in recommending that designs for the public buildings which are built under authority of the Treasury Department shall be obtained by public competition among architects, and that the functions of the Supervising Architect shall be really supervisory. Our readers have probably not forgotten the lively interest which was aroused by the suggestion when it was first made, and the approval which it received from the whole profession, and especially from almost everybody whose experience bore upon the matter; nor yet the two bills which were prepared to bring about the change, by the Treasury Department and the American Institute of Architects, and which, introduced into Congress, were lost in committee. It is encouraging to be told that Mr. Hill, in his turn, comes up to the charge; and it may be hoped that successive recommendations will in time bring the thing to pass. Another change of which Mr. Hill continues the recommendation is, that the work on the government buildings be done under contract instead of by the day. So far as he has been able to try this under the existing regulations, he has found it to be for the advantage of the government. The question is one of some difficulty, and we have never been able to see on which side the advantages or the disadvantages predominated. Any experience that gives clear ground for a decision of the question will be valuable. Mr. Hill is said also to again recommend the building of a new assay-office and a new custom-house in New York, and the selling of government lots in Astoria, Oregon, Bermuda Hundred, Va., Bridewell (Chicago), Ill., the marine hospitals at San Francisco and in Louisiana, and the old New York post-office in Pine Street.

THE Grand Jury of the Brooklyn Court of Sessions have recommended the following precautions against fires in theatres. They demand that in all now existing theatres an iron plating an eighth of an inch thick shall be put upon the side of the proscenium-wall next the stage; and that drop-curtains of woollen stuff be provided, saturated with chemicals which shall "make them fire-proof." The ceilings of theatres should, they urge, be deadened with two inches of plaster of Paris, on iron lathing, and hung by iron rods if they are supported from the roofs. Each division of a theatre should have its separate exit to the lobby or main entrance; and another in some other part of the house for relief, if the first is obstructed. The stairs should be built with treads of blue stone between brick walls, and have platforms at every ten feet (of height, we presume); and, whenever they turn, the platform should be expanded into an entry or lobby, while everywhere there should be hand-rails which could bear a strain of fifty pounds to the foot. Scenery and property not in use should be stored in rooms disconnected from the theatre building, and the wings, cellars, and lofts kept free of combustible rubbish. Steam-heating should supplant the use of stoves, and hydrants with hose be supplied for each floor or gallery and at each end of the orchestra. An attendant fireman with a speaking-trumpet to control the audience, and a description in the programme of all the fire-appliances and means of escape to instruct them in the intervals of the performances, are also recommended. We should not think that these requirements, unless it were the stone staircases and the scene-docks, would tax managers or proprietors very heavily.

SCARCELY had the Brooklyn Theatre disaster come to remind people of the need of exercising some control over the public work of architects, when the almost equally frightful calamity at Ashtabula followed it to enforce the regulation of works of engineering. An iron truss bridge of a hundred feet span, over a ravine sixty or seventy feet deep, broke and let an engine and eleven cars down into the river below. The same day brought the news that a bridge in Vermont had also given way under a train; fortunately in this last case no lives were lost, and the accident attracted little notice. Both accidents may well serve to remind us of a gap in legislation which we suspect exists in all States. So far as we know there are no building laws for engineers anywhere in the country. Certainly there is no effective supervision of their work. The civil engineers of the country are an exceedingly capable body on the whole; but they are not all so, and it is not safe to leave to any body of men such responsibilities without any control. Dams are built by hundreds, railroad bridges are put up by thousands, all over the country: the lives of a great part of the people are at their mercy. But except the railroad or other corporations, whose officers the engineers are that build them, there is nobody whose business it is to see that they are secure. The building of railroads is a venture whose profitableness is always uncertain. Most of the newer ones have failed one or two companies: close economy and temporary sufficiency have been the rule in building them. The engineer may be skilful and his work trustworthy, or the conditions may be reversed. The public knows nothing about it; and some day a Mill River dam gives way, and the flood sweeps off three or four villages; or a bridge drops into a river as at Ashtabula, and a hundred passengers are burned, crushed, drowned, or frozen to death.

THE public has provided no security against the unlimited repetition of such disasters. Its only reliance in a matter which concerns its own life and death is on the skill of a large body of engineers and constructors, and the unwatched watchfulness of those who manage the corporations. There is no means provided of knowing how many bridges and dams are at this moment ready to give way like those at Mill River and Ashtabula. Some States have appointed railroad commissioners; but these occupy themselves chiefly in watching the management of the roads, their combinations and tariffs. They are provided with no means of making, and are not held responsible for making, a rigorous inspection of the construction of the roads. It would be, of course, difficult to prescribe rigid laws for the manner of constructing works which are as various in their requirements and methods as railroad bridges; but it would be quite possible to enforce a careful inspection by competent engineers of any construc-

tion as it was built, to keep a record of it, and see that it was adequate in the beginning, and was not allowed to deteriorate into insecurity. It would cost something to do it, but the matter is too serious to be neglected. A vast number of such structures have been built all over the country during the last few years. A great deal of the work has been done as cheaply and hastily as possible. Much of it was meant to be replaced before long; but meanwhile railroads have been growing poorer, and are not in haste to rebuild. It remains to be seen how much of it will be renewed in due season, and how much will enforce its renewal by tumbling down.

IT is said that the Strakosch project of a new opera-house in New York, of which we had heard nothing since its first announcement, and which we supposed was ready for a speedy collapse, is still in hand. If it is true, as has been reported, that Mr. William H. Vanderbilt has taken an active part in it, it is very probable that this, or something like it, will actually be carried out. Three situations are suggested for it, — Gilmore's Garden, the open lot opposite the Grand Central Railroad Station, and a lot on the corner of Fifth Avenue and Forty-fourth Street: of these the favorite, on account of its situation, is the last. It is said also that the making of the plans of the building has already been given to Mr. Arthur Gilman. It is perhaps safe to assume, that, if the project is carried out, important modifications of Mr. Strakosch's original *pronunciamento* will be made.

THE *Transactions* of the Royal Institute of British Architects for the year 1875–6, which we have just received, make a volume of some two hundred and eighty pages in the usual quarto form. These published transactions differ from those issued by the French *Société Centrale* and the American Institute of Architects in that they do not contain a record of action or discussion on subjects of current interest in the profession, but rather, after the time-honored fashion of learned societies, series of papers of historical or scholarly, and only occasionally of immediate practical, interest. We do not get from them, therefore, or get only by remote inference, an idea of what the active body of English architects are really thinking about, what kind of work they are doing, and what the effect is upon the present condition of architecture in England. But in their own way these publications always contain valuable material. It is well that in our day of hurried activity, there is a body that reserves time and record for studious work; and the architectural student will find in the various volumes of these transactions, if he is fortunate enough to have them within reach, a very important collection of special studies by the men of highest attainment among the English architects. Some counterpoise in the way of scholarly influence is needed nowadays against the fever of business activity to which architects are given over; and this the course of the Institute supplies. The present volume contains, besides the opening address of Sir Gilbert Scott, the president of the last year, and an account of the presentation of the Royal Medal to M. Duc, a dozen sessional papers read at the fortnightly meetings during the winter and spring. These are mostly archæological or historical, and include Mr. Parker's account of recent excavations at Rome, the interesting paper on Byzantine decoration read by Mr. Pullan, Mr. Fergusson's notable restoration of the Erectheum, which provoked a great deal of controversy last year, papers on Old Cleeve Abbey (an old Cistercian house in England), on Troomal Naik's palace at Madura, on the famous octagon of Ely Cathedral, on sixteenth-century Gothic, and others. Besides these there are one or two papers which bear directly on the practice of the day, — on dwellings for the poor, the National Safe Deposit Company's premises, and a discussion of concrete as a building-material. It concludes with the sketch of the history of the Institute with which the secretary, Mr. Eastlake, introduced the general conference of last summer.

WE have received the first number of an illustrated periodical called the *Useful*, which it is proposed to publish monthly. The purpose of it is "to furnish ornamentation for buildings, decorative painting, and furniture. The plates will consist of scale and perspective drawings of interiors, ornaments of buildings, accompanied by detail drawings of working size." The first number contains six folio pages of photolithographed illustrations, including an interesting perspective interior of the library of Hon. Francis B. Hayes of Boston, two drawings for marquetry and wall-painting, which might be interchanged at will, a bit of architectural carving, and a good design for a sideboard, which is accompanied by a double sheet of clever and spirited detail in full size. There is no letter-press, except the short explanations given with the plates, and the publisher's note on the wrapper, from which we have just quoted. The publisher's address is J. H. G. Monroe, box 2861, Boston Post-Office. The drawings bear the signature of a skilful and well-known designer of Boston, Mr. J. Ph. Rinn; and all the designs, we believe, are his. The mechanical execution of the number is not so good as we should expect from the price ($12 per year, or $1.50 per single number), nor as we hope to see in its successors. The lithographing is rather roughly done, — a thing which does not injure the detail-drawings, but does detract materially from the general drawings. Colored plates are promised in future numbers. We wish our new neighbor all success in a field which is certainly an inviting one.

SALUTATORY.

OUR journal begins its second year with this number, and we venture to say a word in its behalf to our readers. An architectural journal naturally takes a somewhat different character in this country from that it would have in those that are older and architecturally more developed. The profession here is comparatively a new one. It is but lately that any serious attempt has been made to unite its members in a common effort to give it shape, or that its practice has been brought into any real uniformity. Even now there remains a good deal of discrepancy, and there are many points of usage conflicting or uncertain. In design there cannot be said to be any generally accepted methods of work, or canons of criticism, or standard of excellence, still less any thing like concurrence of style or taste. The lines between regular and irregular practitioners, and in many parts of the country between architects and builders, are still somewhat loosely drawn; the bounds of many allied vocations are hardly fixed; and the means of professional instruction are only beginning to be well established. Even the ways of living of our people are only half determined, and their tastes but half developed; so that our habits of building, our methods of construction, our appliances and tastes in decoration, are more unsettled than those of any other country. It follows that many things which in European countries are taken for granted, and passed over because they are things of general agreement, are here still in the field of discussion, and must have their places in our paper.

Moreover, we have no archæology that is of any architectural importance; no architectural history to speak of; few monuments whose interest is more than one of association. Although there is a considerable amount of building on a small scale, mostly domestic, which remains to us from a hundred years ago and more, and which is interesting enough to be recorded and examined with care, there is nothing on which to found any scheme, or important part of a scheme, of study. Architectural education has but lately been put on a solid footing by the establishment of three or

four well-founded schools in different parts of the country. With these we are beginning to supply, in an efficient way, the professional training which had formerly to be extracted as best it might be from the routine work of a practising architect's office, except for the fortunate few who were able to go abroad in search of it. The present day, then, is one of marked growth and development in architecture among us, and is seconded by a notable access of public interest in it. Every successive brood of young architects comes to its work with advantages over its predecessors, — with better means of training, and more appliances at its hand, under systems of education that are steadily improving, — and is received by a more interested and a more enlightened public. A degree of skill which used to belong only to a very few architects is now within the attainment of many; and, if the general architecture of the country does not yet show an excellence which corresponds with this progress, at least the signs of its coming are here.

Our time, then, is one of peculiar import to those who have at heart the progress of architecture in the United States. Its two points of strongest interest are, the gradual consolidation of the profession, and the education of its younger members. These things we have kept in mind beside and above the general interests of professional journalism: to them we shall continue to give our best efforts, and for them we invoke the special care of our readers.

The success, and still more the excellence, of such a paper as ours, must depend greatly on the active co-operation of those whom its excellence concerns, — the architectural profession, and other men whose special work it touches and illustrates. If architects are interested — and much cordial encouragement from them has shown that they are — in the fulness and quality of our record of what the country does in architecture and kindred arts, the best encouragement they can give to it is by contributing to it their own designs, and giving it the benefit of their experience and study in matters that engage or deserve the attention of the profession. It is hardly possible for editors in their offices, or even with the aid of regular correspondents in a few principal cities, to find out all that is worth noticing, or to put themselves into communication with every one whose help would be valuable to them.

A purely literary paper or a newspaper may rely upon its staff for all the work it has to do. It is easy to keep the run of what is doing in literature: for this, and for the dissemination of general news, ample provision is made in the business arrangements of a community; and, there being for newspapers and reviews a definite work, it is easy to make definite and satisfactory provision for it. But the work of a professional journal, particularly in a wide country where habits of professional intercommunication do not yet largely prevail, and where the work of the profession is mostly private rather than public, and of a kind which does not invite publicity, — the work of such a journal is of necessity somewhat indefinite. That it should be successfully done requires the voluntary co-operation of those with whom it is concerned. For this reason we renew our appeal to our friends, all of whom we cannot hope to seek out ourselves, — first to architects, to whose especial patronage we look, but also to whosoever sympathizes in our objects, particularly to constructors and decorators, — to help us with what information or contribution they may.

It has been our special desire that our journal should not be local or sectional in its scope, but that it should as far as possible represent and attract the architectural interest of every part of the country. It is of necessity more difficult to accomplish this in the parts of the country which are remote from the office of publication than in those that are near it; and therefore it is in distant cities especially that the editors are obliged to look for unsolicited aid.

We are glad to acknowledge here our indebtedness to voluntary assistance in the past. Much valuable aid has come to us from quarters where we had no means of soliciting it. The advantage we have gained from it heretofore is the best indication of its importance to us at all times. One of the pleasant things of journalism is the direct communication it brings with people who are otherwise inaccessible, the acquaintances which it raises up in unexpected places. This benefit is of a kind which is not confined to the editors. A professional journal especially should be a common ground where its supporters can meet, if not for direct intercommunication, at least for free interchange of ideas, where the common activity of those who are interested in the same pursuit can find its representation, and where they may give and receive a steady impulse to unity of effort and mutual help.

DECORATIVE FINE-ART WORK AT PHILADELPHIA.

AMERICAN FURNITURE. — II.

THE representative apartment of Pottier and Stymus, which contained the amaranth bedstead, was finished in a style which some of the ablest decorators in England and America are trying to introduce. The most prominent example of this in the English section was in the exhibit of Wright and Mansfield of London, and, as claimed by that firm, was in the style of the Brothers Adam, who were the fashionable English architects of the latter part of the eighteenth century. This consisted of a section of a wall with double doors in the centre. The style may be called attenuated Renaissance, and was practised only in the interior woodwork of houses. A very pure example of it may be seen in the entrance-corridor of Independence Hall at Philadelphia; but it is not carried to the point of elaboration and fineness of detail that prevailed in English houses. It was a wooden style, and executed in pine painted white or in delicate tints. The example by Wright and Mansfield was an architectural composition in which very small and intricate mouldings were introduced; many of them enriched with carving, which was all executed in *carton-pierre*. The color was cream, and some of the mouldings were gilded. The door-panels were finely decorated, the paintings being executed on plates of copper and finished with a polished surface like enamel. The sample by Pottier and Stymus was much more rich and costly, but not so good in design. The mouldings were generally of chased and burnished brass, like the mouldings introduced by Wright and Mansfield in some of their mahogany furniture. The wood was pine painted white and cream color, and rubbed down and polished. The wall surface in this room was partly covered with upholstery work in blue satin stuffed and tufted, a style of work not defensible under any circumstances, while panels inserted in this bedding were of heavy corded white silk, with painted designs in water-color. These last might have been valuable and effective if treated with the skill displayed by the Japanese in similar work. Nothing could be finer in such a place than the paintings on silk, so many of which were exhibited in the Japanese section. The Adam style, as it is called by the English, hardly bids fair to be generally accepted at the present time. We may prize it in old examples, and admire the refinement of design which entered into the works of its originators; but as exemplified by its champions it is too costly for extensive use, and the whole motive of it is in direct contradiction to the present tendency toward rationalism in architectural design.

The Queen Anne work of Herter Brothers of New York has already been referred to in another place, and hardly needs further notice. It is to be regretted that this firm did not make an exhibit of some of the beautiful work with which the house has been credited during a few years past. Had the work of their able designer Mr. A. Sandier been seen in comparison with that of the English exhibitors, it would have been less easy to concede to them the superiority which their designs in the main portrayed.

The firm of Americanized Englishmen, Robert Ellin & Co., of New York, was the only one in this country to exhibit a piece of furniture which contested with them for the palm at all points. The oak sideboard by this firm was the best piece of furniture in the American department. It erred perhaps in the matter of heaviness, a point which the Englishmen have thoroughly overcome in Gothic and Queen Anne work. Mr. Ellin is a stone-carver by profession, and carving both in stone and wood is the specialty of his firm. In this piece it worthily sustained its already high reputation for wood-carving, and it is safe to say that in this particular none of the English work could equal it.

The chairs and lectern exhibited by this firm were thoroughly Gothic in construction and decoration, and in no way inferior to the sideboard so far as the carving is concerned. A superb example of Mr. Ellin's stone-carving was seen in the stone font exhibited by him; and his partner Mr. Kitsen contributed an *alto-relievo* carved in Caen stone, illustrating the battle of the beasts and birds, which should have been placed in the Art Gallery, but it

was none the less appreciated though hung in an obscure and disadvantageous place.

The works of Ellin & Co., with the exception of the sideboard, were for ecclesiastical uses and designed in accordance with mediæval precedents. Several other Americans exhibited domestic furniture in which the distinctive forms of Gothic art were more fully reflected than in any of the English furniture with the exception of that of Cox & Sons and Henry Hems. In these as in most of the Gothic work that has been produced in this country, may be seen the influence of the published designs of B. J. Talbert, which have been so extensively circulated. The most prominent object of the class was a black-walnut sideboard designed and made by Daniel Pabst of Philadelphia. The treatment was rather architectural throughout, too much so for practical purposes. Such a heavy piece as this should be built in a house, and not be treated as movable furniture. The wood was filled and highly polished on shellac, as is the common practice of our cabinet-makers with their best work; but this is a method which destroys all the vitality of good Gothic work, especially when vitality is its essential characteristic. The carving was not to be compared with that of Ellin. The hinges and metallic mountings were of oxidized silver of the finest workmanship and spirited in design. All the panels were filled with relief-carving, animal and floral forms being introduced; but these were not all of original design. A noticeable feature was the central mirror surmounted by a crocketed gable, richly carved, with finial composed of two birds resembling pelicans. Four finials on the posts which defined the three main divisions were finished with carved cockatoos. The amount of rich carving far surpassed that on any other Gothic piece in the Exhibition; but in the main it was without purpose or distinctive meaning. Still it was free from conventionalisms and far better than such as was displayed on the oak sideboard in the Belgian department. Mr. Pabst also displayed a Renaissance sideboard, which however has few merits as compared with his Gothic work. His Gothic work reflected the prevalent defects of the revival in the tendency to introduce too many architectural forms pertaining to stone-work only. The oak dining-room by Smith and Campion of Philadelphia was on the whole the best exhibit of a full set of Gothic furniture made by any of the Americans. The surroundings and background, though of well-selected paper-hangings, were not such as to make it as attractive as some others; but it was, as it pretended to be, an exhibit of furniture. The set was very large, having two sideboards and a full set of chairs, and included an oak mantel and mirror-frame. Very little carving was employed, and the constructive character of the work was made evident, while it was free from the eccentricities and meretricious adjuncts so generally introduced by cabinet-makers when working in this style. It reflected, more than any thing else in the Exhibition, the influence of Talbert upon American art-workmanship. The exhibit of this firm included a library with furniture of ebonized and gilded wood, a bedroom in black walnut, and a parlor in black and gold. The last three were in the Renaissance style. Their contribution was altogether the largest and most prominent of any of the Philadelphians, and went far to sustain the credit of that city for progress in artistic design. An exhibit made by Brown & Bliss of New York, of extension-tables of the common pattern, contained also four Gothic sideboards, all of good design, but possessed of the faults common to the so-called "Eastlake" furniture.

The carved oak pulpit by F. & H. Schroeder of Cincinnati was not unlike that in the Belgian section. The general design reflected the characteristics of German Gothic of the fifteenth century. The panel carvings in high relief representing scenes in the life of Christ were rendered in a spirited manner, and the carved figures of the apostles at the angles were equally well done. The wood, like all the foreign work in oak, was only oiled, and was not spoiled by too much surface finish. As a work of art it was superior to the Belgian pulpit.

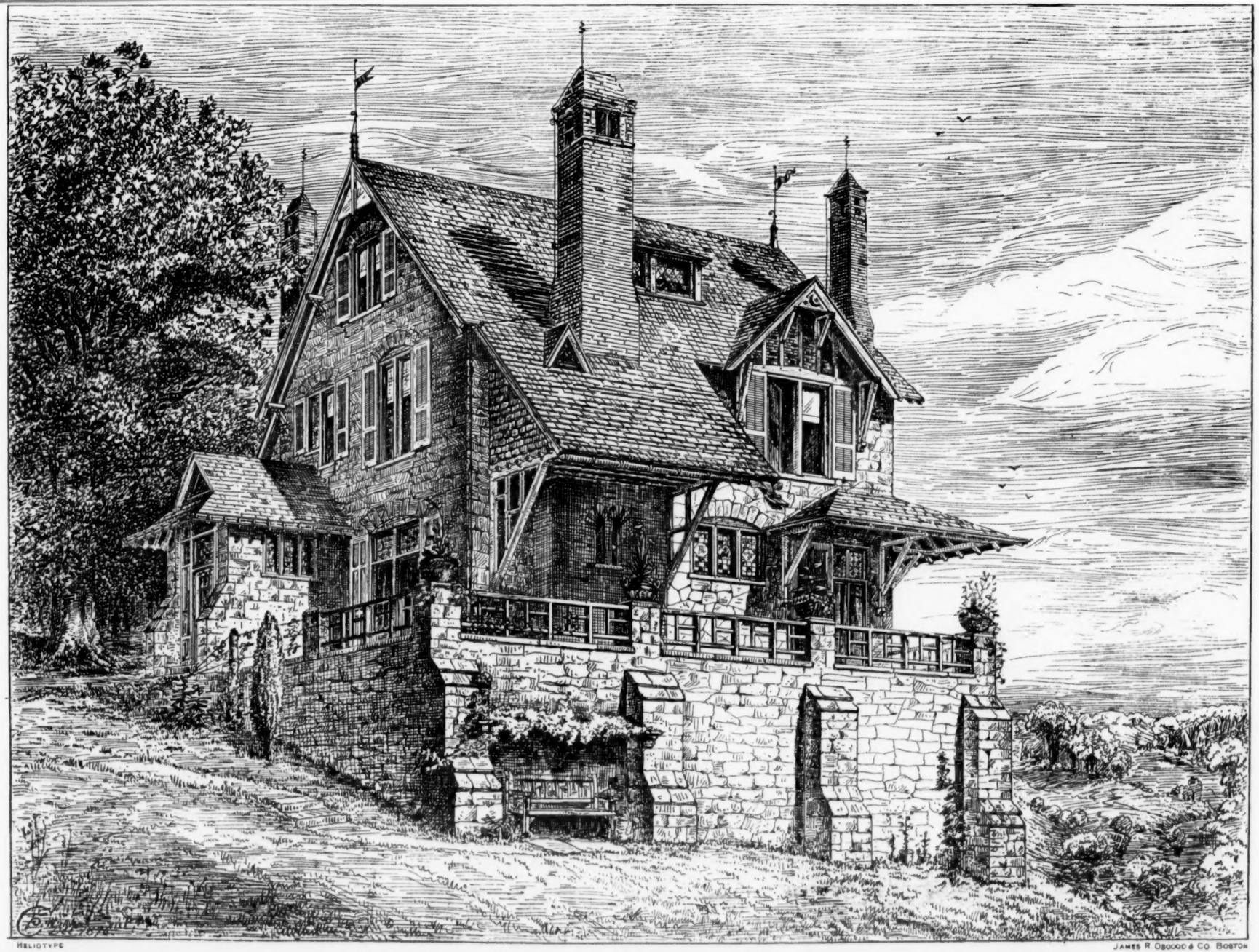
The Exhibition contained several examples of that sort of furniture which, having the appearance of Gothic work, is not designed in the true spirit of the style. These were to be found only in the American department. The revival of artistic furniture, now in progress, is due mainly to the study of mediæval constructions in wood. We are indebted to the research of Viollet-le-Duc, as exemplified in his Dictionary of Furniture, for the most that is known of the subject. The publication of the designs of Talbert, and Charles L. Eastlake's "Hints on Household Taste," have done much to popularize the style, which until recently had only been seen in a few works designed by architects. A popular demand for Gothic work has accordingly arisen, and naturally furniture-makers are eager to cater to this demand. When and how the name has been applied, would be difficult to ascertain; but as if by united accord they have called their manufactures "Eastlake furniture." It is fortunate that we have a term by which to distinguish manufacturers' Gothic from artistic work, though perhaps it is not very flattering to Mr. Eastlake himself to see such productions bearing his name. But if we are to believe what he says, we may infer that he is indifferent; for at the last Social Science Convention he made this remark in his excellent paper on a subject akin to that which we are now discussing; "It is no doubt a little annoying to this or that leader of taste, when he finds his inventions travestied or becoming common property; but after all it is the fate of leaders to be followed, and the fate of the copier to be inferior, and he may well derive satisfaction from the hope that he is guiding the public even after this indirect fashion." We wish that we could feel that Mr. Eastlake is guiding the American public "after this indirect fashion." Whatever good he has done in this respect has only been appreciated by the reading public, who have not sufficient practical knowledge to fully understand his teachings. It is evident from their works that the manufacturers have never read his book, or else they might better be able to cater to the public demand for better things. An expert has only to make the most casual examination of these articles put forth in the name of "Eastlake," to see that they are almost all of them as veritable shams as ever were produced before; and some of the architects' work is not free from the same defects. It is doubtless true that many of the manufacturers are quite ignorant of the fact that the style is based upon constructive principles rather than external form; but it must be admitted that most of them regard the style as a fashion which will have its time like all others. Moreover there is a difficulty directly in the way of the production of good furniture in nearly every shop in the land, and no one can appreciate it better than those who have had to do directly with the designing of furniture. This is found in the lack of skill in our workmen, combined with a prejudice against any innovation upon their old-time processes. It is safe to say that workmen in the present state of the trade take more pride in the performance of some feat which contradicts all the natural properties of wood, or perhaps in the ability to conceal some defect, than in the accomplishment of honest and faithful work. The manufacturers are also unwilling or unable to procure good designs. They ask their designers, long habituated to the conventional shop styles, to do that for which they are not trained; and the result is to make indifferent copies of the designs of Talbert and others, without understanding their meaning, every variation of which is an evident blunder. Regarding this as a new fashion only, the proprietor cannot appreciate that the successful understanding of it requires years of training, study, and research. Of course men who are educated draughtsmen themselves, like Herter and Marcotte, do not fall into these errors; and when they make Gothic furniture it has the true mediæval ring to it. Marcotte produced some excellent Gothic chairs and escritoires long before the so-called "Eastlake" furniture made its appearance. But the generality of manufacturers, even if disposed to do the right thing, do not see any profit in overcoming the obstacles which lie in the way.

We are impelled to offer the above remarks because of the fact that there are those among cultivated people deeply interested in the current revival of art as applied to house decoration, who have not the practical knowledge to discriminate between the true and the false in furniture construction, and are likely to be misled by pretentious exhibits made by those who little understand the meaning and purpose of the revival, but are only on the alert to make money out of it. This state of affairs can only be deplored by all right-thinking people. We will be charitable enough to infer that the most of those manufacturers who have been doing so much to corrupt the taste of the community, and nullify the teachings of genuine enthusiasts, have done so unintentionally and for want of the necessary knowledge and resources. But the time has come when this very community is beginning to discriminate for itself; and its dicta will be conclusive. The genuine reformers, the pioneers who have set the furniture reform on foot, commencing with Pugin, and ending with Morris, Burges, Eastlake, and Talbert, in England, and numbering some half-dozen of the most enthusiastic of our own architects, certainly have cause for resentment, and it is time that they had a champion; for the illustrated journals have of late given equal prominence to the sham Gothic of the merchant decorators, and the choicest works of the most advanced students of the art. Household art has become a fashionable topic of discussion; and through all of it the tendency of the art to fall in a pit on this side of the Atlantic before it is fully developed and popularly appreciated, has never been alluded to. This has not been the case in England, where a higher culture exists among well-to-do people, and where manufacturers have employed the best talent in the production of their works, some of the best of which have been sent to the Centennial Exhibition.

We had intended to offer some critical remarks on some of the exhibits which were excellent illustrations of the faults which have been noted; but after what has been said we do not feel like giving any one the opportunity to say that we are trying to injure his business, and condemn one set for the benefit of another. It is to be hoped that the Exhibition itself has inculcated its lessons to all concerned who are not too dull to draw comparisons between their own works and those of their betters, and that its results may be beneficial in this respect, irrespective of what we have said; all of which has been offered with the best intentions toward those to whom our reflections may apply.

THE BROOKLYN FIRE. — On the night of the fire the fire-plug behind the stage was covered by the scenery for "Julius Cæsar"!

American Architect and Building News. Jan. 6. 1877.



HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

House at Radnor, Pa.

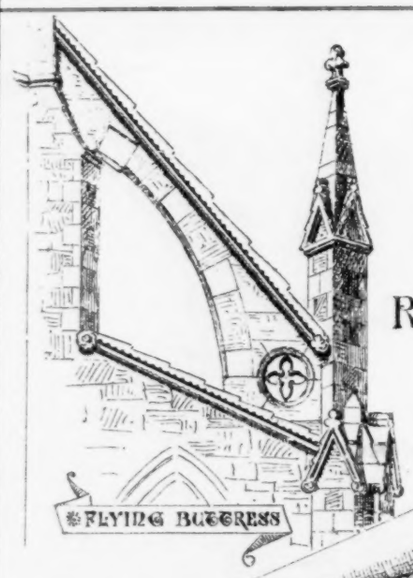
C. P. Chandler Jun. Archt.

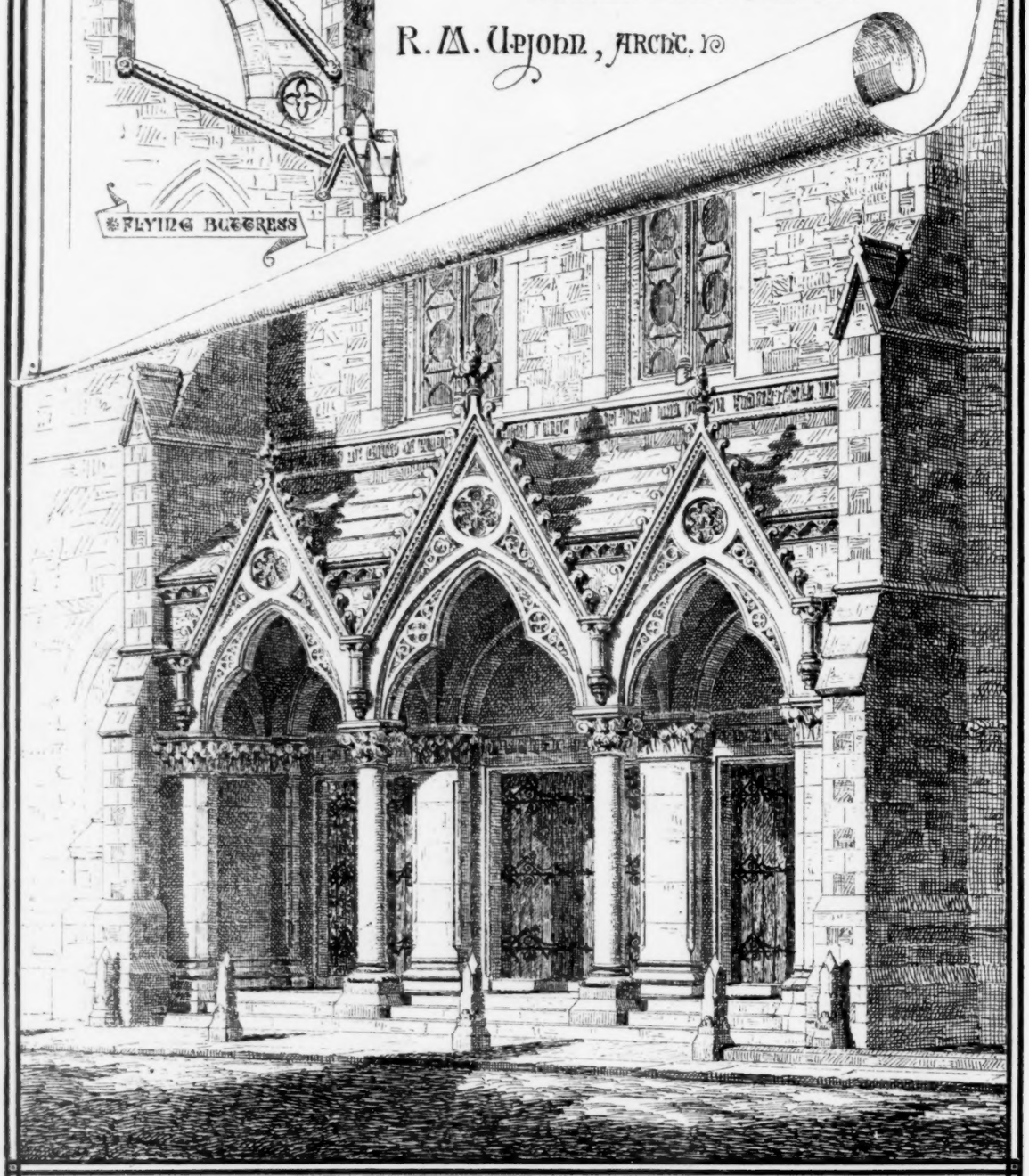
STREET SKETCHES BY L.S. IPSEN. 1875.

CENTRAL CHURCH

BERKELEY STREET, BOSTON.

R. M. UPJOHN, ARCHC.TO



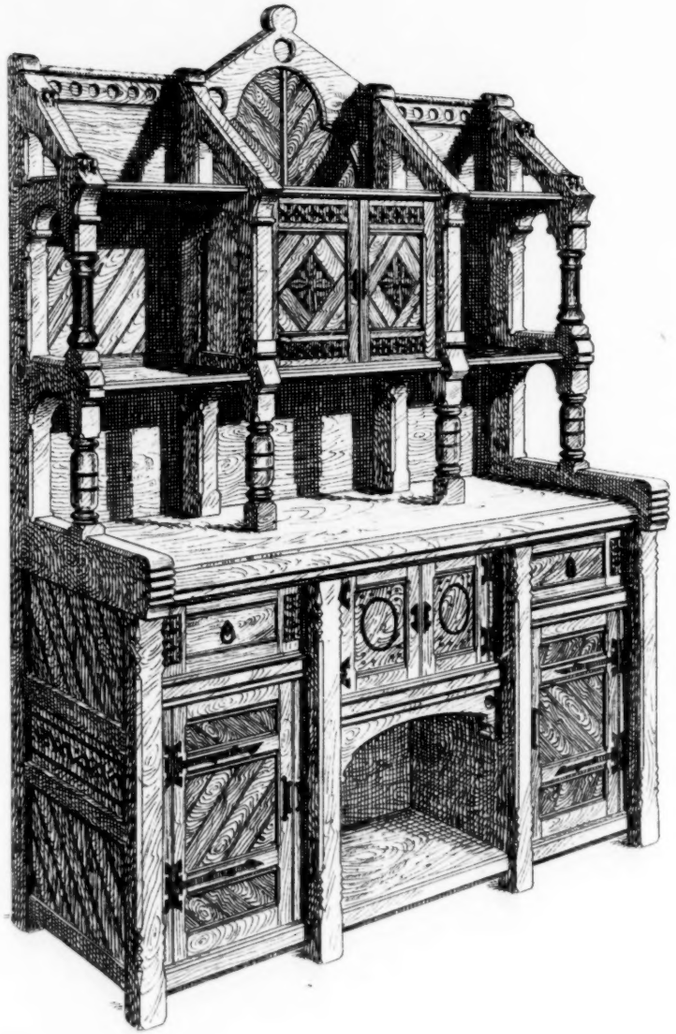


MAIN ENTRANCE PORCH BERKELEY STREET

HELIOTYPE

JAMES R OSGOOD & CO. BOSTON

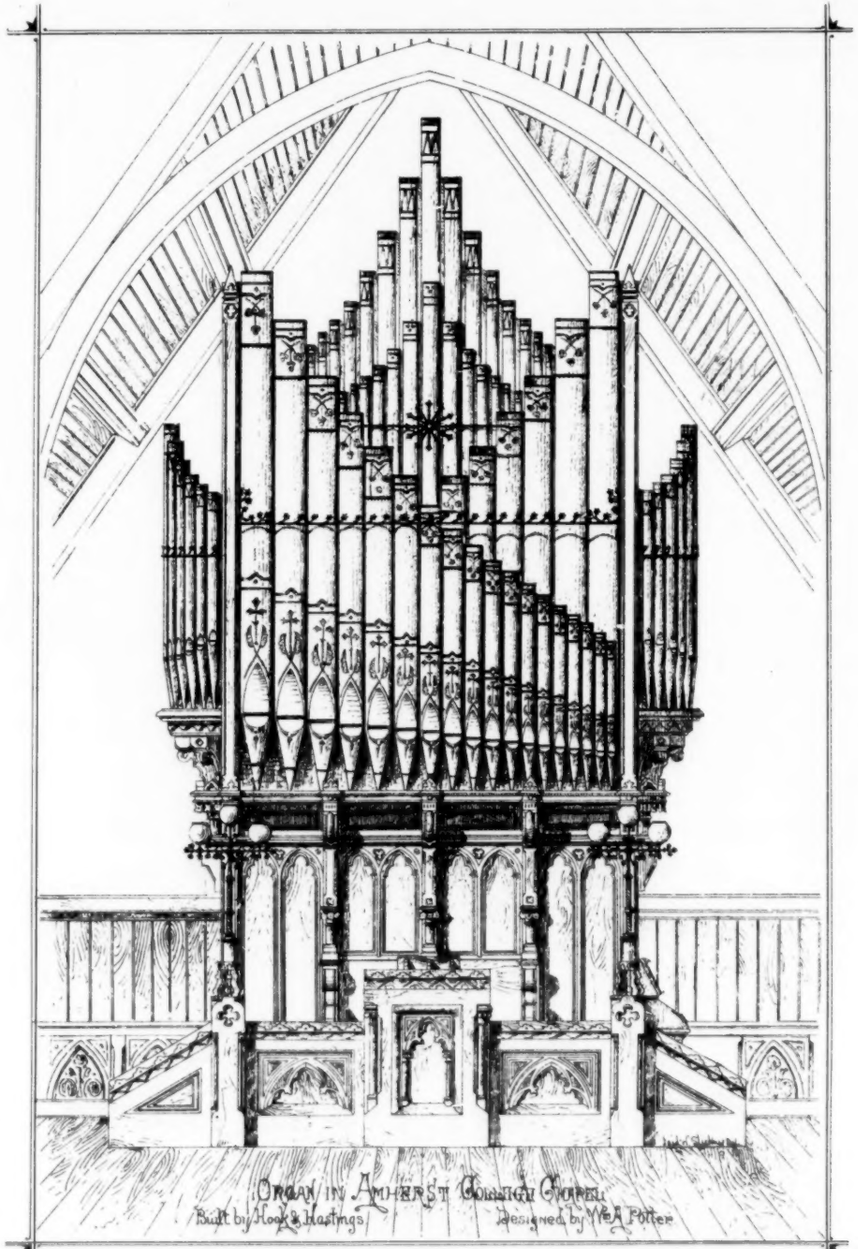
HELIOTYPE
JAMES R. OSGOOD & CO. BOSTON



H. Edwards Ficken: Invt et Del.

BUFFET.

Designed by H.E.FICKEN.
33 East 22nd St: N.Y.



Organ in Amherst County Church.
Built by Hook & Hastings. Designed by W.A. Potter

Heliotype

James R. Osgood & Co.

THE ILLUSTRATIONS.

HOUSE AT RADNOR, PENN. MR. T. P. CHANDLER, JUN., ARCHITECT.

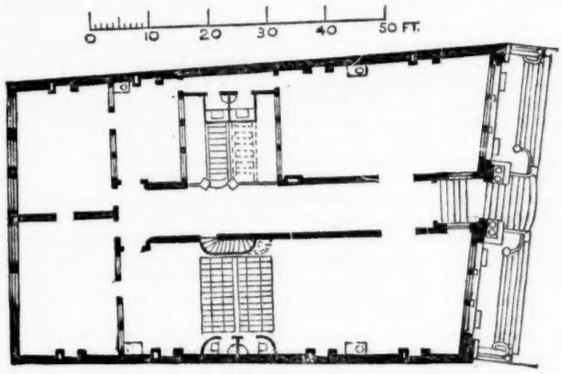
(226 Walnut Street, Philadelphia, Penn.)

THIS drawing represents both the site and house as actually existing. The house is built of gray stone, roofed with slate. One great room stretches along the front with a fireplace in it large enough for a stone seat on either side to be built into the chimney. The ceiling shows the real timbers.

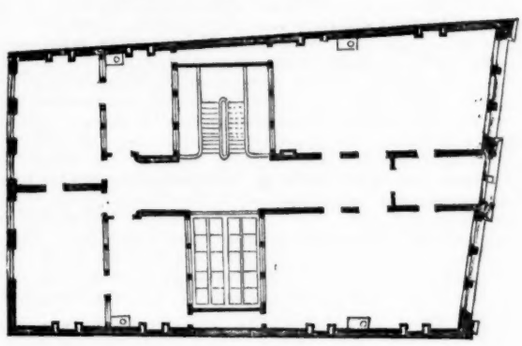
OFFICE BUILDING, NEW YORK, N.Y. MR. R. G. HATFIELD, ARCHITECT.

(31 Pine Street, New York, N.Y.)

The building is of brick with wrought work of Ohio stone and tile decoration.



FIRST STORY PLAN



SECOND STORY PLAN

PORCH OF THE CENTRAL CHURCH, BOSTON, MASS. MR. R. M. UPJOHN, ARCHITECT.

(111 Broadway, New York, N.Y.)

This is one of a series of drawings prepared by members of the Portfolio Club, for the purpose of illustrating the architecture of Boston. The church is well known.

DESIGN FOR A BUFFET. MR. H. E. FICKEN.

(52 William Street, New York, N.Y.)

DESIGN FOR THE ORGAN AT AMHERST COLLEGE CHAPEL, AMHERST, MASS. MR. WM. A. POTTER, ARCHITECT.

(52 William Street, New York, N.Y.)

INDIAN ARCHITECTURE.[1]

MR. FERGUSSON'S great volume on Indian Architecture is a return to the field in which his first literary venture was made. His essay on the Rock-Cut Temples of India, a sumptuous folio with tinted lithographs, was published now nearly thirty years ago, when only a few examples of Indian architecture had ever been seen by European eyes, when photographs were unknown, when the vast distances of the peninsula were yet unspanned by railroads, and at a period when the art of architecture was still regarded with the sort of dilettante approval which well accorded with the ignoble conditions under which it was for the most part practised.

The Handbook of Architecture in two octavo volumes, which all our readers doubtless know intimately, was issued in 1855, and was afterwards expanded into the very complete History of Architecture, so generally in the hands of the profession to-day, in which, however much the impartial reader may resent the occasional dogmatism and prejudice of the author, he is generally glad to admit and avail himself of the accuracy of his statements of facts.

After thus disporting himself over the whole field of the noble art of architecture, Mr. Fergusson now comes back with all the ardor of youth to his old hunting-grounds, and sends forth this ponderous volume of seven hundred and fifty closely printed pages, and four hundred woodcuts, on the temples and tombs and palaces of India and the far East. Clearly this author's heart is in his work; and the persevering labor which he has devoted to a most obscure and baffling branch of architectural study is worthy of the warmest praise. This is indeed no more than may be justly said of his previous works. He has fairly swept the field; and, though succeeding writers may abridge his work, they can scarcely add greatly to it except by the multiplication of examples.

In the present volume Mr. Fergusson has it all his own way. He has told us all we know of Indian architecture, and may dogmatize at pleasure, without serious fear of contradiction. We confess to finding much of the text very dull reading. The desperate character of the chronology and history to which so much of it is given up, the plentiful accounts of the jaw-bone of Buddha, the begging-pot of Sakya-Muni, the celebrated tooth relic, etc., the dozens of unpronounceable names of kings dead some thousands of years ago, conveying no idea of mortal personages, which crowd the pages, afflict and weary the patient reader. Add to this that the author's theories and assumptions are frequently somewhat shaky even to his own mind, whence we meet on every page passages like this: "We are not at present in a position to say, and may not for a long time be able to feel sure," etc. "Negatively, we may probably say," etc.

Mr. Fergusson's classification of the Indian styles twenty years ago was limited to Buddhist, Jaina, Hindu, and Cashmirian. To these he has now added the Dravidian, the Chalukyan, the Indo-Aryan, and the Indian Saracenic. The longest division of his book is given to the Buddhist, the oldest and in some respects the most interesting of the styles. It is rather upsetting to be told that all the Indian monuments now existing are recent beside the Egyptian temples, and that there is nothing in India which goes back farther than 250 B.C. The oldest example appears to be the little excavated temple of Nigope, near Behar, which has a plan of small dimensions and of charming simplicity, consisting of a circular sanctuary twenty feet in diameter, approached by a door from an outer apartment thirty-three feet long, with an arched roof, with a doorway in one side opening through the face of the cliff. This is the simplest and smallest of the Chaitya Halls, so called, of which an uninterrupted series remain, extending in age from the third century B.C. to the eighth century after our era. The largest and finest of these is the cave of Karli, about two hundred years later than the little cave of Nigope, and with a plan exactly resembling in most essential respects that of a Christian church. It is divided by two great ranges of pillars into nave and side aisles, terminating in a semicircular apse with the great *dagoba* or altar at the centre. The roof is a barrel vault, ornamented by circular wooden ribs, and with a semi-dome over the apse. There is a grand porch in front, with square pillars upholding the face of the cliff, and a great window behind them over the doorway. The whole arrangement is, as Mr. Fergusson points out, substantially the same as that of Norwich Cathedral in England, or the Abbaye aux Hommes at Caen. The structural *chaityas*, those built up with walls of human workmanship, have with a single unimportant exception disappeared; but those which were hewn out of the living rock have withstood the storms of time and the fury of war, and remain to-day as perfect in all essential respects as when they were fresh from the builders' hands, though the religion to which they were consecrated, and which held undisputed sway for near a thousand years over the races of men who peopled these vast regions, vanished from the land a thousand years ago. Mr. Fergusson has some just remarks on the exaggerated idea which prevails respecting the difficulty of hewing out these temples and their elaborate sculptures.

"Considerable misapprehension exists," he says, "on the subject of cutting temples in the rock. Almost every one who sees these temples is struck with the apparently prodigious amount of labor bestowed on their excavation; and there is no doubt that their monolithic character is the chief source of the awe and wonder with which they have been regarded, and that had the Kylas been an edifice of masonry, situated on the plain, it would scarcely have attracted the attention of European travellers. In reality, however, it is considerably easier and less expensive to excavate a temple than to build one. Take for instance the Kylas, the most wonderful of all this class. To excavate the area on which it stands would require the removal of about a hundred thousand cubic yards of rock; but as the base of the temple is solid and the superstructure massive, it occupies in round numbers about one-half of the excavated area; so that the question is simply this, — whether it is easier to chip away fifty thousand yards of rock, and shoot it to spoil (to use a railway term) down a hillside, or to quarry fifty thousand yards of stone, remove it probably a mile

[1] History of Indian and Eastern Architecture. By James Fergusson, D.C.L., F.R.S., M.R.A.S., etc. Published by John Murray, London.

at least to the place where the temple is to be built, and then to raise and set it. The excavating process would probably cost about one-tenth the other. The sculpture and ornament would be the same in both cases, especially in India, where buildings are always set up in block, and the carvings executed *in situ.*"

And of the peculiar adaptability of the rock formation in India to this sort of building, he further says, "The great cave-district of Western India is composed of horizontal strata of amygdaloidal and other cognate trap formations, generally speaking of very considerable thickness, and of great uniformity of texture, and possessing besides the advantage that their edges are generally exposed in perfectly perpendicular cliffs. No rock in any part of the world could be either more suited for the purpose, or more favorably situated, than these formations. They are easily accessible and easily worked. In the rarest possible instances are there any flaws or faults to disturb the uniformity of the design; and when complete they afford a perfectly dry temple or abode, singularly uniform in temperature, and more durable than any class of temples found in any other part of the world."

The chapters on the Buddhist Viharas or monasteries have much that is interesting, but are confused by a mass of detailed description and historical or archæological theory — the latter unsupported for the most part by any thing firmer than ingenious assumption — to an extent which makes them frequently tedious. These monasteries were sometimes caves, generally excavated alongside of a *chaitya*, with the two entrances side by side in the face of the cliff. Sometimes, however, they were built up in the form of many-storied pyramids, each story having a central hall for the assembling of the monks, surrounded by sleeping-cells. Sometimes again, as with those recently excavated near Peshawur, they took the form of a series of courts either square or circular, surrounded by cells, some too small to live in, and apparently intended to contain images, and others evidently used as residences for the monks. All of these monasteries which were built above ground have well-nigh disappeared, but those just mentioned at Peshawur have yielded to their explorers remains of sculpture, and decoration in gold and color, of such richness as to indicate that these institutions must have been maintained in as great splendor as the most luxurious of the monasteries of Italy.

Mr. Fergusson's second book is on the architecture of the Jains. We do not flatter ourselves that any of our readers know who the Jains were; and as Mr. Fergusson nowhere tells us, we may presume it is not necessary that we should know. Between the latest remains of Buddhist architecture and the earliest of the Jains there is a gap of some three hundred years. The characteristics of the latter style are pretty clearly defined. They are, first, the use of the dome, but a dome built with horizontal courses of masonry, converging as they rise, and crowned with a flat stone at top; second, the pillared porches forming the approach to the temples, in which the dome appears carried on eight pillars disposed in the form of an octagon, with the angles filled out, and the sides developed with clusters of other pillars, till the plan of the porch often forms a Greek cross with the dome at the centre, the whole conceived and executed with great freedom and grace, and with extravagant richness of decoration; third, the *sikras* or curvilinear towers, on a vertical basement, square in plan, the basement divided by strongly marked horizontal bands, answering to the entablatures of classic architecture, while the upper or curved portion is as strongly divided by broad vertical bands; fourth, the more or less spacious court surrounding the temple, secluding it from the outer world, presenting an inhospitable wall without, and lined within by an uninterrupted range of small cells.

Mr. Fergusson mentions also as belonging to the Jaina style, a peculiar type of monumental tower, of which only a few specimens remain standing. The two which are here illustrated are singularly graceful and fine.

But it was the Dravidians, whoever they may have been, — for their origin and history are as foggy in Mr. Fergusson's narrative as those of the Jains, — to whom we owe the greatest and most impressive monuments which remain on the soil of India. The Dravidians occupied the southern point of the peninsula, corresponding nearly to what is now the Madras Presidency. Their architectural monuments may be divided into two classes: on the one hand are those cut in or from the rock, of which the best-known is the Kylas at Ellora, a rock-cut temple of most elaborate design, standing free on a vast sunken platform, the rock having been excavated and removed from around it; and on the other the structural temples properly so called, built of stones quarried and laid by the mason's hand.

The first class possess the somewhat factitious interest which attaches to all rock-cut temples, and are often remarkable for great elaborateness and delicacy of sculptured ornament; but are not imposing from their size, or generally interesting from their design. But of the great structural temples, — that for instance at Tanjore with its pyramidal tower eighty feet square, and a hundred and ninety feet high, encrusted with sculpture to the summit; or that at Seringham, with its wonderful group of fourteen or fifteen gigantic gateways or *gopuras;* or Ramisseram, with its four thousand feet of pillared corridors, showing uninterrupted perspectives seven hundred feet long, every pillar a mass of granite sculpture; or Madura, with its *choultrie* or reception-hall, one hundred feet wide and three hundred long, with four ranges of piers, and its great temple hall with a thousand columns whose sculptures, says Mr. Fergusson, "surpass those of any other hall of its class I am acquainted with," — of these works and others as grand, it is impossible not to feel, even from these small woodcuts, the mysterious and indefinable charm which belongs to the work of a race of men of whom we know nothing, but that they have lived and passed away, leaving here the impress of that gorgeous and barbaric imagination which knew no restraint of time or money or human labor, piling its massive stones and setting its myriad pillars, and covering wall and column and roof alike with its wild and grotesque sculpture. Mr. Fergusson has faith that the history of these strange people will not always remain so dark as at present. "New sources of information," he says, "are opening out so rapidly that there seems little doubt that we shall before long be able to recover a perfectly authentic account of the political events of that period, and as perfect a picture of the manners and customs of those days."

The Northern or Indo-Aryan style is that of the Hindoos properly so called. Its temples partake largely of the characteristic of both the Jaina and Dravidian styles; but in the royal palaces of the old Hindoo rajahs we are introduced to a class of buildings of which no example is furnished by any of the styles hitherto treated of, — a class so distinctive and characteristic as to make us wonder why Mr. Fergusson has passed them over so lightly. These palaces date generally from the fifteenth or sixteenth century, and are fascinating from the variety with which the immense masses of building are disposed, the skilful mingling of almost every architectural feature known, — towers, balconies, oriels, gilded domes, — the breadth and brightness of effect produced by the contrast of plain wall with lavish decoration, and the picturesqueness of their sites which seem chosen as much with an eye to pictorial effect as to ease of defence. We should be glad to see the best of these palaces fully illustrated by photographs.

Mr. Fergusson has much more to say of the palaces of the Indian Saracenic style. Here we are led over more familiar ground. The palaces and mosques of Delhi and Agra, the Taje Mehal, the palace of Allahabad, are more or less known to most of our readers through drawings and photographs. They have the characteristic grace and delicacy of Mohammedan architecture everywhere, with an added largeness and expansion caught from the genius of the soil. Of the mosques of Delhi and Ajmir Mr. Fergusson remarks that "as examples of surface-decoration they are probably unrivalled. Nothing in Cairo or Persia is so exquisite in detail, and nothing in Spain or Syria can approach them for beauty of surface-decoration." These mosques are thirteenth-century work; and it is curious to reflect on the contrast which they present in their architecture and in the character and circumstances of their builders to the thirteenth-century work of Europe. The palaces of Delhi and Agra are some four hundred years later, dating from about 1650; and we are not surprised at Mr. Fergusson's enthusiasm over the extent and grandeur of their plan, or the wonderful richness and elegance of the ornament which covers every part of these famous buildings.

We have no space to follow more in detail, as we should be glad to do, this very interesting and instructive work. With all allowances Mr. Fergusson is entitled to the gratitude of all students of architecture for his long labors, and for none more than those which he has given to the preparation of what must have been the most difficult, but what was doubtless to him the most enjoyable portion, of his great work.

CORRESPONDENCE.

OILING SANDSTONE FRONTS. — A NEW CHAPEL. — THE ALDINE. — THE EVENING BULLETIN SUIT. — THE THEATRES.

PHILADELPHIA.

IN view of the fact that several varieties of sandstone still find much favor in the eyes of builders, and that notwithstanding the severity of our winters has in many cases used it very badly, it might have been supposed that ere now it would have been discarded for outside work, or that something would have been proposed to obviate its tendency to shell off from the surface. This is mainly due to the moisture penetrating the surface, and freezing there; the consequent expansion which this occasions in the outer surface of the stone, acting against the rest of the body, causes it generally to disintegrate and separate from the mass, sometimes in large flakes. This is particularly noticeable in outside monuments, balusters to front steps, and, in fact, wherever the stone is quite unprotected. Might it not be very advantageous to saturate the surface in all exposed places with some such material as boiled oil, or a solution of shellac, so as to prevent the entrance of the dampness? It is not unusual in this city to treat brick fronts, both new and old, with a coat of boiled oil; but, to prevent their taking in moisture, several coats are needed. Oil, or some material which will enter the stone, must be used; not paint, which, standing in part on the outer surface, comes away in time, just as the unprotected stone face does. There is on Arch Street a very

handsome little store-front of Caen stone, which was put up some twenty years ago. Very few winters showed that the material was too delicate for exposure. It soon became stained, and began to shell. It was then painted. The oil penetrated the stone, and left the paint body so largely on the surface, that it soon began to scale away; and only since the building has had its *quantum suf.* of oil, has the surface been in any degree fixed.

This disintegration appears in the façade of the Roman Catholic Cathedral of Sts. Peter and Paul, fronting on Logan Square. This is of New Jersey red sandstone, and was erected from the designs of Mr. Le Brun less than twenty years ago, and has a western exposure.

The fine bronze group of the Dying Lioness, by Wolff of Munich, which was purchased about a year ago by the Fairmount Park Art Association, and which many will remember seeing in its temporary position on a large polished granite base at the south-east corner of Memorial Hall, is to be placed *en permanence* as a central object of the carriage concourse in front of the new entrance gates to the Zoölogical Gardens. The new entrance gates are of wrought-iron work, flanked on either side by a small lodge-house of two stories, each of gray stone and brick, all designed by Mr. Hewitt. The new antelope-house, also by Mr. Hewitt, is nearly under cover; and there is every prospect that a new aviary, by the same architect, will be commenced in the spring.

On the north side of Pine Street, between Nineteenth and Twentieth Streets, the old parish of Christ Church is erecting a small chapel from drawings by Mr. J. P. Sims, a brother of the late Mr. Henry Augustus Sims, who during his short career in this city did so much towards awakening our people to an appreciation of architecture as something more than a mere heaping together of building-material. The walls are of brick, outside red with bands of black, and inside Newark buff with bands of red; the string-courses, window heads and jambs, and other ornamental work both inside and out, are of Chicago terra-cotta. What would be the pendant-post of an ordinary hammer-beam roof, in this case has been continued down to the floor, which has enabled the builders to set up the roof-framing prior to completing the walls. The plan is very simple, being little more than a parallelogram divided into four bays, — a system of timber framing beneath one set of the principals forming the chancel arch.

The large building so well known as the Rush Mansion, on Chestnut Street near Twentieth, has been very considerably remodelled by Mr. A. B. Jones. The building was purchased about a year ago by Mr. J. B. Lippincott, the publisher, with the view of altering it into a hotel. It has a frontage of 103 feet, and depth of 76 feet, with a fine garden in the rear. Four stories have been added above the original four, and a dome-like construction above the central portion. A large main entrance has been added of cast-iron work. The general finish is a very simple character of French Renaissance. There will be about one hundred rooms in the house; and it will be called the Aldine.

The libel case of Messrs. Struthers & Sons against the *Evening Bulletin* has attracted no little attention, not only among the building portion of the community, but a large number of the average tax-payers, who begin to feel some interest in getting the worth of their money, so much of which is going into the work at the intersection of Broad and Market Streets. In their specialty, that of furnishing the finished marble-work for the new Municipal Buildings, this firm have the largest single contract ever awarded in this country. This trial, which has occupied the court for the past six weeks, was ended on Dec. 13; and the following morning the sealed verdict was opened, allowing Messrs. Struthers & Sons one cent damages, while the newspaper is rendered liable for the costs. The suit arose from certain articles published in the *Bulletin*, in which attention was called to the sizes and quality of the marble which the contractors were putting into the building; denying the right of a simple agreement between the architect (Mr. John McArthur, jun.) and the contractor, to take precedence of the written contract, endeavoring to rouse public feeling against them by throwing suspicion on the character of their work on the building, and in one article actually charging them with fraud.

Apropos of the work on this Municipal Building, the chairman has lately reported that the amount needed to carry on the work during the coming year would be $1,338,000.

The new bell for Independence Hall, which was presented by Mr. Henry Seybert, and sounded for the first time on the Fourth of July, seems to have the Fates against it. After being on duty in the belfry for about a month, its sound was deemed unsatisfactory, the tone being so low that it was taken down and returned to its Trojan founders, Messrs. Meneely & Kimberly, to be re-cast. This has lately been accomplished, only to find a defect in the interior, which involves a second re-casting; so that the city will be without its bell for another month or more.

Philadelphia has come in for her share of agitation on account of the late Brooklyn horror, and the building-inspectors have been roused to unwonted energy in making their round of examination. The result has been mainly a recommendation of the use of lever instead of flush bolts, for the outside doors, in some of the principal theatres; while two or three of the third-rate establishments have been denounced as regular fire-traps. Kiralfy's Alhambra, on Broad Street, was referred to as being one of the safest places of the kind in the city; but this is exceedingly difficult to realize when one regards the flimsiness of its construction, and the great amount of jig-saw work which goes to make up its decoration, and that of the balconies of the garden adjoining. After the official assurances of these gentlemen that Philadelphia theatres are in the main reasonably safe, it is by no means reassuring to read such a communication as appeared in the *Times* lately, to the effect that not only beneath the stage, but under the auditorium also, of certain of our first-class theatres, there are to be found perfect labyrinths of dressing-rooms and rubbish-holes, full of inflammable material, in close proximity to gas-stoves and unprotected burners. Why has no hint ever been taken from the system observed in most of the European theatres, where the curtain is never raised to an audience except there be in attendance behind the scenes a squad of *sapeurs-pompiers*, fully equipped for any emergency? The efficiency of the well-known Babcock Fire-Extinguishers may have been thoroughly established; but how many instances have there been since their introduction where they have been left in their places to be consumed with the rest of the building, generally on account of its being the business of no one in particular to remember them at the proper moment, and bring them into service?

BLACK BRICK.

POUGHKEEPSIE, N.Y.

EDITOR OF AMERICAN ARCHITECT.

Dear Sir, — Will you by letter or through the columns of the *American Architect* inform me the process of making black brick for building-purposes?

What would be the result of dipping hot bricks in coal-tar? will they stand the weather? A SUBSCRIBER.

WATER-GLASS.

THE EDITOR OF THE AMERICAN ARCHITECT.

Sir, — I was much put about after the long storm of a week or two ago, to find that in several cases the rain had driven clean through the freestone dressings of walls, and wet the plaster and inside finish. I was led to remember that the Germans had used water-glass or some like substance to coat outside stonework or terra-cotta, and to wonder why we could not find something which would serve us in the same way; but I cannot find anybody who knows any thing about it. Please propound in your paper next issue the inquiry whether anybody has any knowledge in this line which he can place at the service of the profession.

Yours very truly, C.

NOTES AND CLIPPINGS.

PANICS. — The panics that have occurred since the Brooklyn fire show how urgent is the necessity that the owners of halls of assemblage should, without awaiting an order from municipal authorities, take pains to assure the public that their buildings are as safe from fire as human ingenuity can make them. It will be years before the people of this generation can go to places of amusement with as much *insouciance* as possessed them a year ago. Four needless panics have lately taken place, — at Washington, D.C., at Newark, N.J., at a theatre in a town in Maine, and at Montreal, Canada, where the fall of a piece of woodwork from the upper gallery gave rise to the belief that it was giving way, which of itself was enough to create a panic without the thoughtless cry of "fire" that some one uttered, in all of which several persons were injured. A fifth panic occasioned by the breaking out of fire in a Sunday school at Danville, Ill., was unattended by casualties, owing to ample means of exit from the building.

FIRE-PROOF SCENERY. — In the process invented by Mr. Dion Boucicault for rendering stage scenery, etc., fire-proof, the canvas and ropes are soaked in a solution of tungstate of soda, and primed when dry with silicate of soda. The woodwork is made fireproof by soaking it first in a solution of tungstate of molybdenum. This method is said to be inexpensive. It was subjected recently, in New York, to the following test: A large piece of canvas had been prepared, and, in the presence of the spectators, a jet of gas several feet long was directed upon it through a blow-pipe nozzle. The canvas not only did not ignite, but for a considerable time no effect whatever was produced, except that it became somewhat black with the smoke. At length, the material having become thoroughly charred, Mr. Boucicault punched a hole through it with the gas-nozzle; but the edges did not kindle in the least degree, an indication that the solution had entirely permeated the texture. Similar experiments were made with ropes and wood washed with the solution, but they could not be made to ignite. The flame directed upon them was thought to be one hundred times more powerful than any flame which could possibly come in contact with any stage scenery.

NO STAGE DOOR. — The Theatre of St. James was originally built by the famous vocalist Braham, and when it was finished the builder discovered that there was no stage door — no stage entrance from the street. Some adjacent property had to be purchased to complete the edifice; and although it is perhaps the prettiest theatre in London, it is the most inconvenient in the way of entrances.

MOVABLE ROOFS. — An occasional correspondent writing to the New York *Times* mentions a new invention, of which we should like to have a more detailed description. He says: "The leading theatres of New York are better constructed than ours in London, and have wider halls and passages; but it seems to me that the model theatre has yet to be built, and it should stand in an open space, with room and appliances to open the house all round as easily as they move the roof at our Canterbury Hall — a sort of rival Alhambra on the other side of the Thames. The architect and engineer, adopting an idea they picked up in Paris, have fitted this music-hall or theatre with a movable roof, which can be manipulated by a child as easily as was the great blast at Hell Gate. An infant can make the Canterbury Hall roofless in a few seconds, so that in the summer the performances can go on as if they were held in the open air, on the plan of the grand classic theatres of Athens; and even in the winter, when it is not snowing or raining, it is a great treat between the acts to have the atmosphere of the place purified by opening the top of it to the heavens. I commend this excellent arrangement to the enterprising managers of New York, where your more equable atmosphere is so much better adapted for a theatre with the roof off than ours. The movable roof is patented here, but the credit of the suggestion is due to France."

THE LATE GALE IN VERMONT. — During the severe gale on Dec. 29, the steeple of the Baptist Church at Bennington, Vt., was blown over and entirely demolished. This edifice was built in 1846, and soon afterward a storm overthrew the steeple; and the present one was built with a view to its being able to withstand any gale. The bell, weighing 2,500 pounds, fortunately did not hit any thing in its descent, and lies upon the ground uninjured. The other parts of the church escaped serious damage. Valentine's knitting-mill had two chimneys, one measuring fifty feet and the other eighty feet, blown over upon the wing of the mill, crashing through the roof and two heavy floors, utterly demolishing quite a quantity of valuable machinery, besides ruining that part of the mill building. At Rockwood's mill the chimney, some seventy-five feet high, fell, carrying roof and machinery through two floors.

FALL OF A CHIMNEY. — On the morning of Dec. 26, the huge cone-shaped chimney of the glass-works of Gillinder & Son, Philadelphia, fell, doing damage to the extent of $5,000. The chimney was 100 feet high, and 20 feet wide at the base. The accident was caused by allowing the fires to go out on Saturday, when the extreme cold weather contracted the bricks, thus rendering the supports for the immense weight of the chimney inadequate. No one was injured.

CONVENT BURNED. — The monastery at St. Elizabeth, Canada, which burned on the 25th ult., causing the death of many of its inmates, was a wooden structure. The fire originated in some inexplicable way between the floor and ceiling.

THE NAVAL MONUMENT AT WASHINGTON. — Workmen are now driving piles at the great gate of the Capitol, at the end of the avenue where the bronze monument of the Navy and Peace is to stand.

AN ENGINEERING FEAT. — A recent change of grade on Mission Street in San Francisco, Cal., necessitated the lowering of a water-pipe some 26 inches. The pipe itself was 22 inches in diameter. It was made of wrought iron, and weighed nearly 60 pounds to the foot, making the weight of the whole in the vicinity of 60,000 pounds. On Saturday afternoon, Dec. 16, a force of about 100 men was set to work to uncover the pipe line, and dig a trench under it to the required depth. As the work progressed, heavy joists were placed across the trench at distances of 40 feet, and the pipe suspended by means of heavy screws resting on the joists. At ten o'clock on Sunday every thing was in readiness. In half an hour the water-gauge showed that all the pressure was gone, and the pipe free of water. Twenty-five of the most intelligent workmen were selected to work the screws and lower the main. The circuit of the lever was marked off in quarters, — one, two, three, four; and at each signal from a trumpeter stationed at the lower end, and directed by the engineer of the company, Hermann Schussler, the workmen simultaneously made a quarter of the circle, and then called out the number. This operation was one requiring the utmost caution, as the difference of a turn or two of the screws between any of the workmen would so unequally distribute the strain as to break the pipe. In fifty minutes the main rested on its bed, the ends were riveted, the water turned into the pipe, and the feat accomplished. Sunday was selected for the work, as on that day there is less water used than on week-days, seldom exceeding 10,000,000 gallons.

CAST-IRON ROOFS. — The *Scientific American* says that iron is more used for architectural purposes in America than elsewhere, but not always in such a manner as to render the building fire-proof. While corrugated iron roofs are an excellent protection against sparks, they yield too readily to any more intense heat. The Germans, who have generally employed tiles, and make the buildings themselves capable of sustaining such roofs and even heavier ones, are now introducing cast-iron plates for roofs. Those made at the Greditz Iron Works weigh from 35 to 44 ounces each, and cover a surface of 8 x 10, or about 80 square inches, making the weight 4 to 5 pounds per square foot, or 25 kilogrammes per square mètre. A square mètre of roofing-slate weighs 25 to 30 kilogrammes, and of tile 57 to 60 kilogrammes. The plates have projecting edges so they fit very tightly, and are held in place by two wire nails beneath the lap.

A LARGE LENS. — M. Tell, the celebrated Paris glass-worker, has just finished casting the crown glass lens for the great Vienna refractor. It is twenty-eight inches in diameter, and weighs one hundred and twelve pounds. It is to be sent to Mr. Howard Grubb, in Dublin, who has the flint lens with which it is to be combined.

THE TALL CHIMNEY AT GLASGOW. — The foundation of this chimney was laid in March, 1857; and on the 6th of October, 1859, the coping was added at the top, at a height of 468 feet from the foundation, and 454 feet from the level of the ground. At the foundation the outside diameter is 50 feet, and at the surface it has diminished to 32 feet, while at the top of the coping the diameter is 12 feet 8 inches. On the 9th of September, 1859, and while the chimney was still unfinished, and therefore before the mortar was dry, a storm occurred which resulted in swinging the chimney out of the perpendicular to the extent of five feet at the top. This accident, though perhaps directly due to the storm, had its origin in a neglect in the building process. Proper allowance had not been made for the contraction of the mortar used in setting the bricks; and as a consequence a certain number of planks were under a great pressure, being arched in the centre. Suddenly one of these at one side gave way in the oscillation caused by the storm, and with the unequal pressure the chimney was then forced from the perpendicular to the extent above stated. That the accident occurred in this way, Mr. Joseph Townsend ascertained by personal observation. For a time some fear was entertained that the whole chimney would come down; but on the 21st of the same month measures were taken to prevent this, and by the 1st of October, the whole was restored to the original upright form. This was effected by sawing the chimney on the side nearest to an imaginary straight line. The following figures give the intervals at which cuttings were made:

1	128 feet from the top.		
2	49 feet below 1		
3	22	"	2
4	15	"	3
5	12	"	4
6	19	"	5
7	20	"	6
8	13	"	7
9	20	"	8
10	30	"	9
11	40	"	10
12	40	"	11
13	41	"	12
	419 feet.		

A PERMANENT REFEREE. — A somewhat novel step has been taken in connection with trades-unions in England. The executive committee of the Durham Miners' Association and the coal-owners of that district have jointly appointed a barrister, with a salary of £300 a year, to sit as an independent person to hear evidence upon any dispute that may occur between employers and employed.

CLOCK DIAL. — It was stated in a recent number that the dial of the new clock at the Crystal Palace, Sydenham (forty feet in diameter) was the largest dial ever constructed. It is said, however, that the cathedral at Mechlin has a dial measuring forty-nine feet in diameter.

GARDENS OF THE LUXEMBOURG. — The gardens of the Luxembourg have just received a monumental fountain by the late sculptor Carpeaux, and a group by the late sculptor Perraud.

A NEW ELECTRIC LIGHT. — Herr Denayrouze has made several trials of Jabloschkoff's electrical lamp in regard to its light-giving capacity, and offers the following report to the French Academy of Science. This new lamp consists of two carbon points fastened parallel a short distance from each other, and separated by a substance which is burned at the same rate as the carbon points. When the electrical action commences, the spark flies from one carbon point to the other, by which means the uppermost rim of the isolating substance is gradually burnt, thereby exposing new surfaces of the carbon to the electrical action, as in a wax candle the wax gradually disappears, permitting the wick to burn. By this means, regulators for keeping the carbon points always at the necessary distance, which arrangement we find in other electrical lamps, are avoided. This invention offers many other advantages. The heat developed by the combustion of the carbon points, which in regulator lamps is radiated into the air, is here used for the melting and volatilization of the isolating substance. The combination of this substance is very various, as most earthy substances can acquire an electrical affinity. Substances looked upon as infusible are volatilized by bringing them into the interior arc of the flame. Denayrouze and Jabloschkoff use for isolating substances sand, glass, mortar, sealing-wax, etc. The simplest and at present cheapest mixture consists of sand and powdered glass. This mixture is not claimed to be the best which can be found. Double the light obtainable with any other apparatus depending upon the regulator is given. If this new invention should in future prove satisfactory, a new impulse will be given to the industrial use of the electrical light, and this method of illumination will, no doubt, gradually supplant gas in manufactories, railroad stations, and other establishments.

WHEN TO PAINT YOUR HOUSE. — The *Technologist* states that paint applied to the exterior of buildings in autumn or winter will endure twice as long as when applied in early summer or in hot weather. In the former it dries slowly, and becomes hard like a glazed surface, not easily affected afterwards by the weather, or worn off by the beating of storms. But in very hot weather the oil in the paint soaks into the wood at once, as if into a sponge, leaving the lead nearly dry, and ready to crumble off. This last difficulty, however, might in a measure be guarded against, though at an increased expense, by first going over the surface with raw oil. Furthermore, by painting in cold weather the annoyance of small flies which invariably collect during the warm season on fresh paint is avoided.

THE TURKISH DAY. — As the hour after sunset is the first hour of the Turkish day, and as this hour varies from day to day, all timepieces are unreliable; and hence public clocks are unknown in Turkish towns.